

The Collembola of New Mexico. XII. Neelinae and Sminthuridinae^{1, 2}

HAROLD GEORGE SCOTT³

None of the nine species reported herein have previously been recorded from New Mexico. Specimens will be deposited with the Academy of Natural Sciences, Philadelphia, Pennsylvania.

Suborder SYMPHYPLEONA Börner, 1901

Body subglobose; segmentation of thorax and abdomen indistinct, although Abd V–VI may be clearly demarked as an anal papilla; colophore sacs usually long and filamentous; anal spines absent.

Family SMINTHURIDAE Lubbock, 1862

Gisin (1960) and Maynard (1951) are followed in designating a single family in the suborder.

KEY TO WORLD SUBFAMILIES OF SMINTHURIDAE

1. Antenna shorter than head. **Neelinae** Handlirsch, 1929
Antenna longer than head. 2
2. Ant IV shorter than III. **Dicyrtominae** Börner, 1906
Ant IV not shorter than III. 3
3. Thoracic segmentation indefinite; colophore warty.
. **Sminthurinae** Börner, 1906
Thoracic segmentation evident; colophore usually smooth. . .
. **Sminthuridinae** Börner, 1906

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³ Training Branch, Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Atlanta 22, Georgia.

Subfamily NEELINAE Handlirsch, 1929

No Neelinae have been recorded from New Mexico, but the subfamily has been reported from a number of the United States and from Mexico.

KEY TO WORLD SPECIES OF NEELINAE

1. Ant III and IV fused (*Megalothorax* Willem, 1900).....2
 Ant III and IV separate.....6
2. Mucro with anterior longitudinal ridge.....3
 Mucro without anterior longitudinal ridge.....4
3. Mucro with 7 teeth (Australasian).....
 **Megalothorax novae-zealandiae** Salmon, 1944
 Mucro without teeth (Australasian).....
 **Megalothorax rubidus** Salmon, 1946
4. Mucro serrate.....5
 Mucro not serrate (Holarctic, Neotropical).....
 **Megalothorax minimus** Willem, 1900
5. Tubercle at base of unguiculus protruding (Nearctic, Neotropical).....**Megalothorax tristani** Denis, 1933
 Tubercle at base of unguiculus not protruding (Holarctic, Neotropical, Australasian).....
 **Megalothorax incertus** Börner, 1903
6. Ant III longer than IV (*Neelides* Caroli, 1912).....7
 Ant III shorter than IV (*Neelus* Folsom, 1896) (Holarctic, Neotropical, Australasian).....
 **Neelus murinus** Folsom, 1896
7. Unguis with ventral tooth (Holarctic, Neotropical).....
 **Neelides minutus** (Folsom, 1901)
 Unguis without ventral tooth (Palearctic).....
 **Neelides folsomi** Caroli, 1912

Subfamily SMINTHURIDINAE Börner, 1906

KEY TO GENERA OF NEARCTIC SMINTHURIDINAE

1. Abd V and VI ankylosed.....**Sminthurides** Börner, 1900
 Abd V and VI separate.....2
2. Ant IV subsegmented.....3
 Ant IV not subsegmented.....**Sminthurinus** Börner, 1901
3. Tenent hairs present.....4
 Tenent hairs absent.....**Arrhopalites** Börner, 1906
4. Bothriotricha present.....
 **Katiannina** Maynard and Downs, 1951
 Bothriotricha absent.....**Metakatianna** Denis, 1933

Genus **SMINTHURIDES** Börner, 1900

KEY TO SPECIES OF NEARCTIC SMINTHURIDES (FEMALES)

NOTE: Males of *Sminthurides* have Ant III-IV modified into a clasping organ. Female antennae are not so modified.

1. Apex of unguiculus branched.....*bifidus* (Mills, 1934)
 Apex of unguiculus simple.....2
2. Ant IV simple.....3
 Ant IV subdivided.....9
3. Tibiotarsal organ absent.....4
 Tibiotarsal organ present.....6
4. Mucronal bristle present.....*ramosus* (Folsom, 1932)
 Mucronal bristle absent.....5
5. Tibiotarsus III with serrate bristles.....
 *serratus* (Folsom and Mills, 1938)
 Tibiotarsus III without serrate bristles.....
 *pumilis* (Krausbauer, 1901)
6. Guard hair of tibiotarsal organ bifid.....7
 Guard hair of tibiotarsal organ simple.....8
7. Antenna subequal to head.....
 *ludovicianus* Folsom and Mills, 1938
 Antenna longer than head.....
 *globocerus* Folsom and Mills, 1938
8. Mucro not more than $2 \times$ as long as wide.....
 *aquaticus* (Bourlet, 1842)
 Mucro about $3 \times$ as long as wide.....
 *malmgreni* (Tullberg, 1876)
9. Ant IV with 3 subsegments.....*aureolus* Maynard, 1951
 Ant IV with 4 subsegments.....10
 Ant IV with 5 subsegments.....12
 Ant IV with 7 subsegments....*annulicornis* Axelson, 1905
 Ant IV with 12 subsegments....*pseudoviolaceus* sp. nov.
10. Basal subsegment of Ant IV about $2 \times$ apical segment.....
 *pseudassimilis* Stach, 1956
 Basal subsegment of Ant IV more than $2 \times$ apical segment..
 11
 Basal subsegment of Ant IV subequal to apical segment..14
11. Claw tunicate.....*occultus* Mills, 1934
 Claw not tunicate....*macnamarai* Folsom and Mills, 1938
12. Mucro straight.....13
 Mucro curved.....*terrestris* Maynard, 1951
13. Mucro apically bulbous.....*lepus* Mills, 1934
 Mucro not apically bulbous.....*plicatus* (Schott, 1891)

14. Abdomen patterned dorsally. .*assimilis* (Krausbauer, 1898)
Abdomen not patterned dorsally.
.....*krausbaueri* Folsom and Mills, 1938
var. *distinctus* Linnaniemi, 1912

***Sminthurides bifidus* Mills, 1938**

NEW MEXICO RECORD. Beneath bark of fir log, 11,000 ft, Taos Co.; Sep. 1953.

DISTRIBUTION. Fla., Iowa, La., Minn., N. M., N. Y.; Ontario (Canada).

***Sminthurides malmgreni* (Tullberg, 1876)**

NEW MEXICO RECORD. Berlese sample of pine log, 7,400 ft, Torrance Co., Jul. 1952.

DISTRIBUTION. Ill., Iowa, La., Mass., Mont., N. M., N. Y., Texas, Utah, Wash., Wyo.; Ontario (Canada); Europe.

***Sminthurides pseudoviolaceus* sp. nov. Fig. 1.**

TYPE LOCALITY. Holotype and 4 paratypes from Abo Monument, W of Mountainair, Torrance Co., NEW MEXICO; from under dung in open juniper area, 6,100 ft, 15-ix-1954. Type specimens will be deposited with the Academy of Natural Sciences, Philadelphia, Pennsylvania.

DESCRIPTION. Body subglobose, fused; color light purple with dark purple antennae; clothed with short to medium setae; integument smooth to granular; head hypognathous; antenna to head as 9:4; antennal segments as 5:6:9:23; Ant IV of female with about 12 indistinct subsegments, Ant IV of male modified into clasping organ; eyes 8 and 8 on dark eye patches; mouthparts chewing; thoracic segmentation evident; tibiotarsal organ present; claws tunicate; apex of female unguiculus simple; colophore smooth; furcula reaching colophore; manubrium to dens to mucro as 5:15:6; mucro untoothed, non-lamellate; Abd V-VI fused; abdominal papilla absent; anus terminal; length 0.3 mm.

DISTRIBUTION. N. M.

Sminthurides pumilis (Krausbauer, 1898)

NEW MEXICO RECORD. Berlese sample of walnut litter 6,900 ft, Socorro Co., Jul. 1954.

DISTRIBUTION. Iowa, La., N. M., N. Y., Utah; Manitoba (Canada); Europe; Australasia.

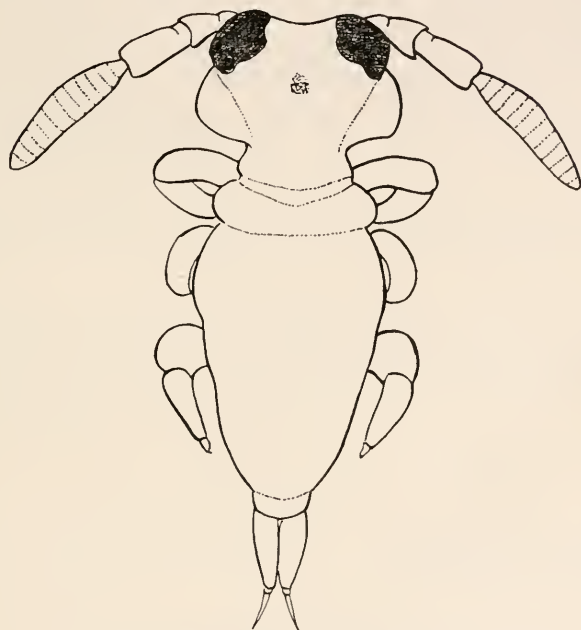


FIG. 1. *Sminthurides pseudoviolaceus* sp. nov.

Genus **SMINTHURINUS** Börner, 1901

1. Both edges of mucro smooth.....2
One edge of mucro serrate.....3
Both edges of mucro serrate.....7
2. Antenna about $1.5 \times$ head.....*radiculus* Maynard, 1951
Antenna about $1.2 \times$ head.....*remotus* Folsom, 1896
3. Ventral edge of mucro curved. .*similitortus* Maynard, 1951
Ventral edge of mucro straight.....4
4. Larger part of abdomen patterned...*elegans* (Fitch, 1863)
Larger part of abdomen unicolorous.....5

5. General color white to yellow.....6
General color black.....*minutus* (MacGillivray, 1894)
6. Dens about $3 \times$ mucro.....*megoculatus* Maynard, 1951
Dens $2.2-2.5 \times$ mucro.....*aureus* (Lubbock, 1862)
Dens about $2 \times$ mucro.....*latimaculosus* Maynard, 1951
7. Mucro serrate its full length.....8
Mucro serrate on basal half only....*downsi* Maynard, 1951
8. Unguis serrate laterally..*quadrimaculatus* (Ryder, 1879)
Unguis not serrate.....9
9. Unguis III with 3 inner teeth.....
....*niger* (Lubbock, 1868) f. *concolor* (Meinert, 1896)
Unguis III with 1-2 inner teeth.....10
10. Brown.....*brunneus* Maynard, 1951
Black.....*niger* f.p. (Lubbock, 1868)

Sminthurinus elegans (Fitch, 1863) (may = *S. bourleti* (Gervais, 1844))

NEW MEXICO RECORD. Beneath bark of aspen log, 10,000 ft, Bernalillo Co., Sep. 1951.

DISTRIBUTION. Ill., Iowa, Me., Mass., N. M., N. Y., Tenn., Wash.; Ontario (Canada); Europe.

Sminthurinus brunneus Maynard, 1951

NEW MEXICO RECORD. Berlese sample of pine log, 7,400 ft, Torrance Co., Jul. 1952.

DISTRIBUTION. N. M., N. Y.

Sminthurinus quadrimaculatus (Ryder, 1879)

NEW MEXICO RECORD. Beneath bark of yellow pine stump, 6,500 ft, Catron Co., Jun. 1952.

DISTRIBUTION. Fla., Ill., Iowa, Me., Mass., N. M., N. Y., Pa.

Genus **ARRHOPALITES** Börner, 1906

KEY TO SPECIES OF NEARCTIC ARRHOPALITES

1. Ant IV simple.....*diversus* Mills, 1934
Ant IV subsegmented.....2

2. Anal valve with minute spines.....*caecus* (Tullberg, 1871)
Anal valve without minute spines.....3
3. Subanal appendage simple.....*pygmaeus* (Wankel, 1860)
Subanal appendage branched.....*principalis* (Stach, 1945)

***Arrhopalites caecus* (Tullberg, 1871)**

NEW MEXICO RECORD. Berlese sample of log in spruce-fir forest, 10,300 ft, Taos Co., Sep. 1953.

DISTRIBUTION. Ill., Minn., N. M., N. Y., N. C., Pa.; Europe; Australasia.

Genus **KATIANNINA** Maynard and Downs, 1951

Only one species of *Katiannina* is recorded from North America.

***Katiannina macgillivrayi* (Banks, 1897)**

NEW MEXICO RECORD. Berlese sample of juniper litter, 6,700 ft, Rio Arriba Co., Sep. 1952.

DISTRIBUTION. N. M., N. Y.

SUMMARY

Nine species of Sminthuridinae (4 *Sminthurides*, 3 *Sminthurinus*, 1 *Arrhopalites*, 1 *Katiannina*) including *Sminthurides pseudoviolaceus* sp. nov., are recorded from New Mexico for the first time. No Neelinae are known from the state. Keys are presented to world subfamilies of Sminthuridae, world species of Neelinae, genera of Nearctic Sminthuridinae, and species of Nearctic *Sminthurides*, *Sminthurinus*, and *Arrhopalites*.

REFERENCES CITED

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